

## Interview Summary

Application No.

09/320,349

Applicant(s)

WEDGE, DONALD SCOTT

Examiner

Andrew Graham

Art Unit

2644

All participants (applicant, applicant's representative, PTO personnel):

(1) Andrew Graham.

(3) David LaRiviere.

(2) Brent Capehart.

(4) Donald Wedge.

Date of Interview: 07 March 2006.

Type: a) ☐ Telephonic b) ☐ Video Conference  
c) ☒ Personal [copy given to: 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☒ Yes e) ☐ No.

If Yes, brief description: Demonstration of result of claimed method and simulated system was presented, demonstrating the audible separation of two different audio sources as applied and output from two different speakers/output channels.

Claim(s) discussed: 2, 3 and 18.

Identification of prior art discussed: Kinoshita, Slater.

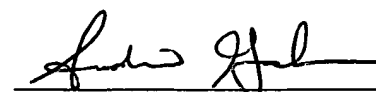
Agreement with respect to the claims f) ☐ was reached. g) ☒ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: See Continuation Sheet.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.



Examiner's signature, if required

## Summary of Record of Interview Requirements

### Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

### Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

#### Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

#### 37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,  
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

### Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Applicant discussed nature of current state of the art and the utility of the present application, particularly with regards to aircraft audio systems. Differences between the area of application of Kinoshita (teleconference) and the present application (aircraft, such as Claim 18) were presented and discussed, though no agreement was reached regarding any form of difference in the pertinent claim language. Differences between the cited continuous weather information source (claims 2-3) and the applied combination of references was also presented; copies of descriptions of various aircraft radio communications were also presented by the applicant, as is evidenced by the ten (10) pages attached hereto, to clarify/substantiate the definition of 'continuous' intended to interpreted from the language of Claim 3. No agreement was reached with regards to the pending or any forms of claim language to be submitted in the future .



**SINH TRAN**  
**SUPERVISORY PATENT EXAMINER**

## Section 2. Radio Communications Phraseology and Techniques

### 4-2-1. General

a. Radio communications are a critical link in the ATC system. The link can be a strong bond between pilot and controller or it can be broken with surprising speed and disastrous results. Discussion herein provides basic procedures for new pilots and also highlights safe operating concepts for all pilots.

b. The single, most important thought in pilot-controller communications is understanding. It is essential, therefore, that pilots acknowledge each radio communication with ATC by using the appropriate aircraft call sign. Brevity is important, and contacts should be kept as brief as possible, but controllers must know what you want to do before they can properly carry out their control duties. And you, the pilot, must know exactly what the controller wants you to do. Since concise phraseology may not always be adequate, use whatever words are necessary to get your message across. Pilots are to maintain vigilance in monitoring air traffic control radio communications frequencies for potential traffic conflicts with their aircraft especially when operating on an active runway and/or when conducting a final approach to landing.

c. All pilots will find the Pilot/Controller Glossary very helpful in learning what certain words or phrases mean. Good phraseology enhances safety and is the mark of a professional pilot. Jargon, chatter, and "CB" slang have no place in ATC communications. The Pilot/Controller Glossary is the same glossary used in FAA Order 7110.65, Air Traffic Control. We recommend that it be studied and reviewed from time to time to sharpen your communication skills.

### 4-2-2. Radio Technique

a. Listen before you transmit. Many times you can get the information you want through ATIS or by monitoring the frequency. Except for a few situations where some frequency overlap occurs, if you hear someone else talking, the keying of your transmitter will be futile and you will probably jam their receivers causing them to repeat their call. If you have

just changed frequencies, pause, listen, and make sure the frequency is clear.

b. Think before keying your transmitter. Know what you want to say and if it is lengthy; e.g., a flight plan or IFR position report, jot it down.

c. The microphone should be very close to your lips and after pressing the mike button, a slight pause may be necessary to be sure the first word is transmitted. Speak in a normal, conversational tone.

d. When you release the button, wait a few seconds before calling again. The controller or FSS specialist may be jotting down your number, looking for your flight plan, transmitting on a different frequency, or selecting the transmitter for your frequency.

e. Be alert to the sounds or the lack of sounds in your receiver. Check your volume, recheck your frequency, and make sure that your microphone is not stuck in the transmit position. Frequency blockage can, and has, occurred for extended periods of time due to unintentional transmitter operation. This type of interference is commonly referred to as a "stuck mike," and controllers may refer to it in this manner when attempting to assign an alternate frequency. If the assigned frequency is completely blocked by this type of interference, use the procedures described for en route IFR radio frequency outage to establish or reestablish communications with ATC.

f. Be sure that you are within the performance range of your radio equipment and the ground station equipment. Remote radio sites do not always transmit and receive on all of a facility's available frequencies, particularly with regard to VOR sites where you can hear but not reach a ground station's receiver. Remember that higher altitudes increase the range of VHF "line of sight" communications.

### 4-2-3. Contact Procedures

#### a. Initial Contact.

1. The terms *initial contact* or *initial callup* means the first radio call you make to a given facility or the first call to a different controller or FSS specialist within a facility. Use the following format:

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## Chapter 1. Navigation Aids

### Section 1. Air Navigation Aids

#### 1-1-1. General

a. Various types of air navigation aids are in use today, each serving a special purpose. These aids have varied owners and operators, namely: the Federal Aviation Administration (FAA), the military services, private organizations, individual states and foreign governments. The FAA has the statutory authority to establish, operate, maintain air navigation facilities and to prescribe standards for the operation of any of these aids which are used for instrument flight in federally controlled airspace. These aids are tabulated in the Airport/Facility Directory (A/FD).

b. Pilots should be aware of the possibility of momentary erroneous indications on cockpit displays when the primary signal generator for a ground-based navigational transmitter (for example, a glideslope, VOR, or nondirectional beacon) is inoperative. Pilots should disregard any navigation indication, regardless of its apparent validity, if the particular transmitter was identified by NOTAM or otherwise as unusable or inoperative.

#### 1-1-2. Nondirectional Radio Beacon (NDB)

a. A low or medium frequency radio beacon transmits nondirectional signals whereby the pilot of an aircraft properly equipped can determine bearings and "home" on the station. These facilities normally operate in the frequency band of 190 to 535 kilohertz (kHz) and transmit a continuous carrier with either 400 or 1020 hertz (Hz) modulation. All radio beacons except the compass locators transmit a continuous three-letter identification in code except during voice transmissions.

b. When a radio beacon is used in conjunction with the Instrument Landing System markers, it is called a Compass Locator.

c. Voice transmissions are made on radio beacons unless the letter "W" (without voice) is included in the class designator (HW).

d. Radio beacons are subject to disturbances that may result in erroneous bearing information. Such

disturbances result from such factors as lightning, precipitation static, etc. At night, radio beacons are vulnerable to interference from distant stations. Nearly all disturbances which affect the Automatic Direction Finder (ADF) bearing also affect the facility's identification. Noisy identification usually occurs when the ADF needle is erratic. Voice, music or erroneous identification may be heard when a steady false bearing is being displayed. Since ADF receivers do not have a "flag" to warn the pilot when erroneous bearing information is being displayed, the pilot should continuously monitor the NDB's identification.

#### 1-1-3. VHF Omni-directional Range (VOR)

a. VOR's operate within the 108.0 to 117.95 MHz frequency band and have a power output necessary to provide coverage within their assigned operational service volume. They are subject to line-of-sight restrictions, and the range varies proportionally to the altitude of the receiving equipment.

##### NOTE-

*Normal service ranges for the various classes of VOR's are given in Navigational Aid (NAVAID) Service Volumes, paragraph 1-1-8.*

b. Most VOR's are equipped for voice transmission on the VOR frequency. VOR's without voice capability are indicated by the letter "W" (without voice) included in the class designator (VORW).

c. The only positive method of identifying a VOR is by its Morse Code identification or by the recorded automatic voice identification which is always indicated by use of the word "VOR" following the range's name. Reliance on determining the identification of an omnirange should never be placed on listening to voice transmissions by the Flight Service Station (FSS) (or approach control facility) involved. Many FSS's remotely operate several omniranges with different names. In some cases, none of the VOR's have the name of the "parent" FSS. During periods of maintenance, the facility may radiate a T-E-S-T code (- ●●●● -) or the code may be removed.

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(c) Approximate density altitude data.

(d) Information regarding such items as air traffic services and rules, customs/immigration procedures, ADIZ rules, search and rescue, etc.

(e) LORAN-C NOTAM's, available military NOTAM's, and runway friction measurement value NOTAM's.

(f) GPS RAIM availability for 1 hour before to 1 hour after ETA or a time specified by the pilot.

(g) Other assistance as required.

c. **Abbreviated Briefing.** Request an Abbreviated Briefing when you need information to supplement mass disseminated data, update a previous briefing, or when you need only one or two specific items. Provide the briefer with appropriate background information, the time you received the previous information, and/or the specific items needed. You should indicate the source of the information already received so that the briefer can limit the briefing to the information that you have not received, and/or appreciable changes in meteorological/aeronautical conditions since your previous briefing. To the extent possible, the briefer will provide the information in the sequence shown for a Standard Briefing. If you request only one or two specific items, the briefer will advise you if adverse conditions are present or forecast. (Adverse conditions contain both meteorological and/or aeronautical information.) Details on these conditions will be provided at your request. International data may be inaccurate or incomplete. If you are planning a flight outside of U.S. controlled airspace, the briefer will advise you to check data as soon as practical after entering foreign airspace, unless you advise that you have the international cautionary advisory.

d. **Outlook Briefing.** You should request an Outlook Briefing whenever your proposed time of departure is six or more hours from the time of the briefing. The briefer will provide available forecast data applicable to the proposed flight. This type of briefing is provided for planning purposes only. You should obtain a Standard or Abbreviated Briefing prior to departure in order to obtain such items as adverse conditions, current conditions, updated forecasts, winds aloft and NOTAM's, etc.

e. **When filing a flight plan only,** you will be asked if you require the latest information on adverse conditions pertinent to the route of flight.

f. **Inflight Briefing.** You are encouraged to obtain your preflight briefing by telephone or in person before departure. In those cases where you need to obtain a preflight briefing or an update to a previous briefing by radio, you should contact the nearest AFSS/FSS to obtain this information. After communications have been established, advise the specialist of the type briefing you require and provide appropriate background information. You will be provided information as specified in the above paragraphs, depending on the type briefing requested. In addition, the specialist will recommend shifting to the Flight Watch frequency when conditions along the intended route indicate that it would be advantageous to do so.

g. Following any briefing, feel free to ask for any information that you or the briefer may have missed or are not understood. This way, the briefer is able to present the information in a logical sequence, and lessens the chance of important items being overlooked.

## 7-1-5. En Route Flight Advisory Service (EFAS)

a. EFAS is a service specifically designed to provide en route aircraft with timely and meaningful weather advisories pertinent to the type of flight intended, route of flight, and altitude. In conjunction with this service, EFAS is also a central collection and distribution point for pilot reported weather information. EFAS is provided by specially trained specialists in selected AFSS's controlling multiple Remote Communications Outlets covering a large geographical area and is normally available throughout the conterminous U.S. and Puerto Rico from 6 a.m. to 10 p.m. EFAS provides communications capabilities for aircraft flying at 5,000 feet above ground level to 17,500 feet MSL on a common frequency of 122.0 MHz. Discrete EFAS frequencies have been established to ensure communications coverage from 18,000 through 45,000 MSL serving in each specific ARTCC area. These discrete frequencies may be used below 18,000 feet when coverage permits reliable communication.

b. Contact ARTCC facility for your location, position, and approximate transmitter/receiver.

**EXAMPLE-**  
Cleveland Flight Watch  
Mansfield V-Tower

c. Charts and control static use are contained which flight by using the identification facility will watch facility

**EXAMPLE-**  
Flight Watch  
Mansfield V-Tower

d. AFSS Service are

e. EFAS closing flight complete pilot weather re advisories begins after Immediate drome forecast requesting i watch will frequency t tion is essen a continuous winds, tur

only, you will be asked information on adverse state of flight.

You are encouraged to call by telephone or in those cases where you are unable to get a fix or an update to a fix, you should contact the nearest FSS. After this information is established, advise the FSS of the information. You will be required to provide information. You will be advised in the above type briefing. The FSS will recommend a frequency when the route indicates that it is.

Feel free to ask for any information that you may have missed. The briefer is able to provide a logical sequence, and pertinent items being

### Advisory Service

Specifically designed to provide timely and meaningful information on the type of flight conditions. In conjunction with a central collection of reported weather information by specially trained personnel controlling multiple frequencies covering a large area normally available in the U.S. and Puerto Rico provides communication at 5,000 feet MSL on a common frequency. EFAS frequencies are communications at 5,000 MSL serving as a. These discrete frequencies at 18,000 feet when communication.

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b. Contact flight watch by using the name of the ARTCC facility identification serving the area of your location, followed by your aircraft identification, and the name of the nearest VOR to your position. The specialist needs to know this approximate location to select the most appropriate transmitter/receiver outlet for communications coverage.

#### EXAMPLE-

*Cleveland Flight Watch, Cessna One Two Three Four Kilo, Mansfield V-O-R, over.*

c. Charts depicting the location of the flight watch control stations (parent facility) and the outlets they use are contained in the A/FD. If you do not know in which flight watch area you are flying, initiate contact by using the words "Flight Watch," your aircraft identification, and the name of the nearest VOR. The facility will respond using the name of the flight watch facility.

#### EXAMPLE-

*Flight Watch, Cessna One Two Three Four Kilo, Mansfield V-O-R, over.*

d. AFSS's that provide En Route Flight Advisory Service are listed regionally in the A/FD's.

e. EFAS is not intended to be used for filing or closing flight plans, position reporting, getting complete preflight briefings, or obtaining random weather reports and forecasts. En route flight advisories are tailored to the phase of flight that begins after climb-out and ends with descent to land. Immediate destination weather and terminal aerodrome forecasts will be provided on request. Pilots requesting information not within the scope of flight watch will be advised of the appropriate AFSS/FSS frequency to obtain the information. Pilot participation is essential to the success of EFAS by providing a continuous exchange of information on weather, winds, turbulence, flight visibility, icing, etc.,

Meteorology

between pilots and flight watch specialists. Pilots are encouraged to report good weather as well as bad, and to confirm expected conditions as well as unexpected to EFAS facilities.

### 7-1-6. Inflight Aviation Weather Advisories

#### a. Background

1. Inflight Aviation Weather Advisories are forecasts to advise en route aircraft of development of potentially hazardous weather. All inflight aviation weather advisories in the conterminous U.S. are issued by the Aviation Weather Center (AWC) in Kansas City, Missouri. The Weather Forecast Office (WFO) in Honolulu issues advisories for the Hawaiian Islands. In Alaska, the Alaska Aviation Weather Unit (AAWU) issues inflight aviation weather advisories. All heights are referenced MSL, except in the case of ceilings (CIG) which indicate AGL.

2. There are three types of inflight aviation weather advisories: the Significant Meteorological Information (SIGMET), the Convective SIGMET and the Airmen's Meteorological Information (AIRMET). All of these advisories use the same location identifiers (either VOR's, airports, or well-known geographic areas) to describe the hazardous weather areas. See FIG 7-1-2 and FIG 7-1-3. Graphics with improved clarity can be found in Advisory Circular AC 00-45E, Aviation Weather Services, which is available on the following web site: <http://www.faa.gov/avr/afs/afs400>.

3. Two other weather products supplement these Inflight Aviation Weather Advisories:

(a) The Severe Weather Watch Bulletins (WW's), (with associated Alert Messages) (AWW), and

(b) The Center Weather Advisories (CWA's).

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2. The following example is a CWA issued from the Kansas City, Missouri, ARTCC. The "3" after ZKC in the first line denotes this CWA has been issued for the third weather phenomena to occur for the day. The "301" in the second line denotes the phenomena number again (3) and the issuance number (01) for this phenomena. The CWA was issued at 2140Z and is valid until 2340Z.

**EXAMPLE-**

ZKC3 CWA 032140

ZKC CWA 301 VALID UNTIL 032340

ISOLD SVR TSTM over KCOU MOVG SWWD 10 KTS ETC.

**7-1-7. Categorical Outlooks**

a. Categorical outlook terms, describing general ceiling and visibility conditions for advanced planning purposes are used only in area forecasts and are defined as follows:

1. **LIFR (Low IFR).** Ceiling less than 500 feet and/or visibility less than 1 mile.
2. **IFR.** Ceiling 500 to less than 1,000 feet and/or visibility 1 to less than 3 miles.
3. **MVFR (Marginal VFR).** Ceiling 1,000 to 3,000 feet and/or visibility 3 to 5 miles inclusive.
4. **VFR.** Ceiling greater than 3,000 feet and visibility greater than 5 miles; includes sky clear.

b. The cause of LIFR, IFR, or MVFR is indicated by either ceiling or visibility restrictions or both. The contraction "CIG" and/or weather and obstruction to vision symbols are used. If winds or gusts of 25 knots or greater are forecast for the outlook period, the word "WIND" is also included for all categories including VFR.

**EXAMPLE-**

1. *LIFR CIG-low IFR due to low ceiling.*
2. *IFR FG-IFR due to visibility restricted by fog.*
3. *MVFR CIG HZ FU-marginal VFR due to both ceiling and visibility restricted by haze and smoke.*
4. *IFR CIG RA WIND-IFR due to both low ceiling and visibility restricted by rain; wind expected to be 25 knots or greater.*

**7-1-8. Telephone Information Briefing Service (TIBS)**

a. TIBS, provided by automated flight service stations (AFSS's) is a continuous recording of

meteorological and aeronautical information, available by telephone. Each AFSS provides at least four route and/or area briefings. In addition, airspace procedures and special announcements (if applicable) concerning aviation interests may also be available. Depending on user demand, other items may be provided; i.e., METAR observations, terminal aerodrome forecasts, wind/temperatures aloft forecasts, etc.

b. TIBS is not intended to substitute for specialist-provided preflight briefings. It is, however, recommended for use as a preliminary briefing, and often will be valuable in helping you to make a "go or no go" decision.

c. TIBS is provided by Automated Flight Service Stations (AFSS's) and provides continuous telephone recordings of meteorological and/or aeronautical information. Specifically, TIBS provides area and/or route briefings, airspace procedures, and special announcements (if applicable) concerning aviation interests.

d. Depending on user demand, other items may be provided; i.e., surface observations, terminal forecasts, winds/temperatures aloft forecasts, etc. A TOUCH-TONE™ telephone is necessary to fully utilize the TIBS program.

e. Pilots are encouraged to avail themselves of this service. TIBS locations are found at AFSS sites and can be accessed by use of 1-800-WX BRIEF toll free number.

**7-1-9. Transcribed Weather Broadcast (TWEB)**

Equipment is provided at three AFSS/FSS locations in the lower 48 States (Arcata, California; Bridgeport, CT; Princeton, Minnesota) and all of Alaska, by which meteorological and aeronautical data are recorded on tapes and broadcast continuously over selected low-frequency (190-535 kHz) navigational aids (L/MF ranges or H facilities) and/or VOR's. Broadcasts are made from a series of individual tape recordings, and changes, as they occur, are transcribed onto the tapes. The information provided varies depending on the type equipment available. Generally, the broadcast contains route-oriented data with specially prepared NWS forecasts, Inflight Advisories, and winds aloft plus preselected current information, such as weather reports (METAR/SPECI), NOTAM's, and special notices. In some

locations, the information is provided for VOR only and is limited to weather for the part adjacent stations. Aerodrome forecasts, adverse conditions, and other potential selected locations, when provided (TIBS for this service and Weather Service TAF/D). These broadcasts for preflight and should not be considered specialist-provided.

**7-1-10. Inflight**

a. Weather A broadcast a Seven Convective SIGMET on all frequencies of the area description airspace under the contain SIGMET description of the affected.

**EXAMPLE-**

1. *Attention all aircraft to Tuba City to Milk icing below one zero beyond zero three zero.*
2. *Attention all aircraft Eastern. From the Scattered embedded zero knots. A few winds five zero.*
3. *Attention all aircraft advisory one zero to severe icing from eight mile radius of St. L from four thousand Kansas City Center*

**NOTE-**

Terminal control follows: local control to broadcast SIGMET part of the area description under their jurisdiction



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tical information, available at least four times a day. In addition, airspace announcements (if applicable) may also be made. Other items include METAR observations, winds, wind temperatures

used to substitute for briefings. It is, however, preliminary briefing, and you are to make a "go or no go" decision.

Automated Flight Service provides continuous telephone service and/or aeronautical information. FSS provides area and/or procedures, and special (if applicable) concerning aviation

and, other items may be provided, terminal forecasts, etc. A decision is necessary to fully

to avail themselves of this service found at AFSS sites and 1-800-WX-BRIEF toll free

### Weather Broadcast

three AFSS/FSS locations at Santa Ana, California; Bridgeport, Connecticut; and all of Alaska, by and aeronautical data are broadcast continuously over 190-535 kHz) navigational facilities) and/or VOR's. In a series of individual tapes, as they occur, are provided. The information provided is type equipment available.

locations, the information is broadcast over the local VOR only and is limited to such items as the hourly weather for the parent station and up to 5 immediately adjacent stations, local NOTAM information, aerodrome forecast (TAF) for the parent station, adverse conditions extracted from Inflight Advisories, and other potentially hazardous conditions. At selected locations, telephone access to the TWEB has been provided (TEL-TWEB). Telephone numbers for this service are found in the FSS and National Weather Service Telephone Numbers section of the A/FD. These broadcasts are made available primarily for preflight and inflight planning, and as such, should not be considered as a substitute for specialist-provided preflight briefings.

### 7-1-10. Inflight Weather Broadcasts

a. **Weather Advisory Broadcasts.** ARTCC's broadcast a Severe Weather Forecast Alert (AWW), Convective SIGMET, SIGMET, or CWA alert once on all frequencies, except emergency, when any part of the area described is within 150 miles of the airspace under their jurisdiction. These broadcasts contain SIGMET or CWA (identification) and a brief description of the weather activity and general area affected.

#### EXAMPLE-

1. Attention all aircraft, SIGMET Delta Three, from Myton to Tuba City to Milford, severe turbulence and severe clear icing below one zero thousand feet. Expected to continue beyond zero three zero zero zulu.
2. Attention all aircraft, convective SIGMET Two Seven Eastern. From the vicinity of Elmira to Phillipsburg. Scattered embedded thunderstorms moving east at one zero knots. A few intense level five cells, maximum tops four five zero.
3. Attention all aircraft, Kansas City Center weather advisory one zero three. Numerous reports of moderate to severe icing from eight to nine thousand feet in a three zero mile radius of St. Louis. Light or negative icing reported from four thousand to one two thousand feet remainder of Kansas City Center area.

#### NOTE-

have the option to limit the SIGMET, or CWA broadcast as approach control positions may CWA alerts only when any within 50 miles of the airspace

b. **Hazardous Inflight Weather Advisory Service (HIWAS).** This is a continuous broadcast of inflight weather advisories including summarized AWW, SIGMET's, Convective SIGMET's, CWA's, AIRMET's, and urgent PIREP's. HIWAS has been adopted as a national program and will be implemented throughout the conterminous U.S. as resources permit. In those areas where HIWAS is commissioned, ARTCC, Terminal ATC, and AFSS/FSS facilities have discontinued the broadcast of inflight advisories as described in the preceding paragraph. HIWAS is an additional source of hazardous weather information which makes these data available on a continuous basis. It is not, however, a replacement for preflight or inflight briefings or real-time weather updates from Flight Watch (EFAS). As HIWAS is implemented in individual center areas, the commissioning will be advertised in the Notices to Airmen Publication.

1. Where HIWAS has been implemented, a HIWAS alert will be broadcast on all except emergency frequencies once upon receipt by ARTCC and terminal facilities, which will include an alert announcement, frequency instruction, number, and type of advisory updated; e.g., AWW, SIGMET, Convective SIGMET, or CWA.

#### EXAMPLE-

Attention all aircraft. Hazardous weather information (SIGMET, Convective SIGMET, AIRMET, Urgent Pilot Weather Report (UUA), or Center Weather Advisory (CWA), Number or Numbers) for (geographical area) available on HIWAS, Flight Watch, or Flight Service frequencies.

2. In HIWAS ARTCC areas, AFSS/FSS's will broadcast a HIWAS update announcement once on all except emergency frequencies upon completion of recording an update to the HIWAS broadcast. Included in the broadcast will be the type of advisory updated; e.g. AWW, SIGMET, Convective SIGMET, CWA, etc.

#### EXAMPLE-

Attention all aircraft. Hazardous weather information for (geographical area) available from Flight Watch or Flight Service.

3. HIWAS availability is shown on IFR Enroute Low Altitude Charts and VFR Sectional Charts. The symbol depiction is identified in the chart legend.

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operator must determine the applicability of such products to flight operations.

(b) In the case of a weather product which is the result of the application of a process which alters the form, function or content of the base FAA/NWS accepted weather product(s), that process, and any limitations to the application of the resultant product should be described in the vendor's user guidance material.

2. An example would be a NEXRAD radar composite/mosaic map, which has been modified by changing the scaling resolution. The methodology of assigning reflectivity values to the resultant image components should be described in the vendor's guidance material to ensure that the user can accurately interpret the displayed data.

3. To ensure airman compliance with Federal Aviation Regulations, National Airspace System (NAS) status products (such as NOTAM's, Special Use Airspace Status, etc.) and other government flight information should include verbatim transmissions of FAA products. If these products are modified, the modification process, and any limitations of the resultant product should be described in the vendor's user guidance.

#### 7-1-12. Weather Observing Programs

a. **Manual Observations.** With only a few exceptions, these reports are from airport locations staffed by FAA or NWS personnel who manually observe, perform calculations, and enter these observations into the (WMSCR) communication system. The format and coding of these observations are contained in paragraph 7-1-30, Key to Aviation Routine Weather Report (METAR) and Aerodrome Forecasts (TAF).

#### b. Automated Weather Observing System (AWOS).

1. Automated weather reporting systems are increasingly being installed at airports. These systems consist of various sensors, a processor, a computer-generated voice subsystem, and a transmitter to broadcast local, minute-by-minute weather data directly to the pilot.

#### NOTE-

When the barometric pressure exceeds 31.00 inches Hg, see paragraph 7-2-2, Procedures, for the altimeter setting procedures.

2. The AWOS observations will include the prefix "AUTO" to indicate that the data are derived from an automated system. Some AWOS locations will be augmented by certified observers who will provide weather and obstruction to vision information in the remarks of the report when the reported visibility is less than 7 miles. These sites, along with the hours of augmentation, are to be published in the A/FD. Augmentation is identified in the observation as "OBSERVER WEATHER." The AWOS wind speed, direction and gusts, temperature, dew point, and altimeter setting are exactly the same as for manual observations. The AWOS will also report density altitude when it exceeds the field elevation by more than 1,000 feet. The reported visibility is derived from a sensor near the touchdown of the primary instrument runway. The visibility sensor output is converted to a visibility value using a 10-minute harmonic average. The reported sky condition/ceiling is derived from the ceilometer located next to the visibility sensor. The AWOS algorithm integrates the last 30 minutes of ceilometer data to derive cloud layers and heights. This output may also differ from the observer sky condition in that the AWOS is totally dependent upon the cloud advection over the sensor site.

3. These real-time systems are operationally classified into four basic levels:

(a) AWOS-A only reports altimeter setting;

(b) AWOS-I usually reports altimeter setting, wind data, temperature, dew point, and density altitude;

(c) AWOS-2 provides the information provided by AWOS-I plus visibility; and

(d) AWOS-3 provides the information provided by AWOS-2 plus cloud/ceiling data.

4. The information is transmitted over a discrete VHF radio frequency or the voice portion of a local NAVAID. AWOS transmissions on a discrete VHF radio frequency are engineered to be receivable to a maximum of 25 NM from the AWOS site and a maximum altitude of 10,000 feet AGL. At many locations, AWOS signals may be received on the surface of the airport, but local conditions may limit the maximum AWOS reception distance and/or

altitude. The system transmits weather message updates to monitor the designated weather broadcast. A database contained in subparagraph communication capabilities have a dial-up capability to receive weather messages.

5. AWOS information (phone number, etc.) can be published, as the system is A/FD, and where applicable, the Airport Procedures may be incorporated and disseminated.

c. **AWOS Broadcast.** The phrase "AUTOMATED" is used in AWOS to indicate the minute-by-minute addition, some systems may include an operator e.g., weather remarks parameters. The phrase used for other weather explanations and examples.

1. **Location and Time.** The phrase "AUTOMATED" is followed by the

(a) If the airport is included in the airport's announcement.

**EXAMPLE-**  
"Bremerton National Airport observation, one four five."  
"Ravenswood Jackson observation, one four five."

(b) If the airport is included in the airport announcement followed by the

**EXAMPLE-**  
"Sault Ste. Marie, Chip Airport automated weather observation."  
"Sandusky, Cowley F observation."

(c) The word "1" is used to indicate the commissioned status.

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altitude. The system transmits a 20 to 30 second  
weather message updated each minute. Pilots should  
monitor the designated frequency for the automated  
weather broadcast. A description of the broadcast is  
contained in subparagraph c. There is no two-way  
communication capability. Most AWOS sites also  
have a dial-up capability so that the minute-by-min-  
ute weather messages can be accessed via telephone.

5. AWOS information (system level, frequency,  
phone number, etc.) concerning specific locations is  
published, as the systems become operational, in the  
A/FD, and where applicable, on published Instru-  
ment Approach Procedures. Selected individual  
systems may be incorporated into nationwide data  
collection and dissemination networks in the future.

c. AWOS Broadcasts. Computer-generated  
voice is used in AWOS to automate the broadcast of  
the minute-by-minute weather observations. In  
addition, some systems are configured to permit the  
addition of an operator-generated voice message;  
e.g., weather remarks following the automated  
parameters. The phraseology used generally follows  
that used for other weather broadcasts. Following are  
explanations and examples of the exceptions.

1. Location and Time. The location/name and  
the phrase "AUTOMATED WEATHER OBSERVA-  
TION," followed by the time are announced.

(a) If the airport's specific location is  
included in the airport's name, the airport's name is  
announced.

#### EXAMPLE-

"Bremerton National Airport automated weather  
observation, one four five six zulu;"  
"Ravenswood Jackson County Airport automated  
weather observation, one four five six zulu."

(b) If the airport's specific location is not  
included in the airport's name, the location is  
announced followed by the airport's name.

#### EXAMPLE-

"Sault Ste. Marie, Chippewa County International  
Airport automated weather observation;"  
"Sandusky, Cowley Field automated weather  
observation."

(c) The word "TEST" is added following  
"OBSERVATION" when the system is not in  
commissioned status.

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#### EXAMPLE-

"Bremerton National Airport automated weather  
observation test, one four five six zulu."

(d) The phrase "TEMPORARILY INOP-  
ERATIVE" is added when the system is inoperative.

#### EXAMPLE-

"Bremerton National Airport automated weather  
observing system temporarily inoperative."

#### 2. Visibility.

(a) The lowest reportable visibility value in  
AWOS is "less than 1/4." It is announced as  
"VISIBILITY LESS THAN ONE QUARTER."

(b) A sensor for determining visibility is not  
included in some AWOS. In these systems, visibility  
is not announced. "VISIBILITY MISSING" is  
announced only if the system is configured with a  
visibility sensor and visibility information is not  
available.

3. Weather. In the future, some AWOS's are to  
be configured to determine the occurrence of  
precipitation. However, the type and intensity may  
not always be determined. In these systems, the word  
"PRECIPITATION" will be announced if precipita-  
tion is occurring, but the type and intensity are not  
determined.

#### 4. Ceiling and Sky Cover.

(a) Ceiling is announced as either "CEIL-  
ING" or "INDEFINITE CEILING." With the  
exception of indefinite ceilings, all automated ceiling  
heights are measured.

#### EXAMPLE-

"Bremerton National Airport automated weather  
observation, one four five six zulu. Ceiling two thousand  
overcast;"

"Bremerton National Airport automated weather  
observation, one four five six zulu. Indefinite ceiling two  
hundred, sky obscured."

(b) The word "Clear" is not used in AWOS  
due to limitations in the height ranges of the sensors.  
No clouds detected is announced as "NO CLOUDS  
BELOW XXX" or, in newer systems as "CLEAR  
BELOW XXX" (where XXX is the range limit of the  
sensor).

#### EXAMPLE-

"No clouds below one two thousand."  
"Clear below one two thousand."

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## (2) Manual Input "REMARKS."

- [a] Sky Condition.
- [b] Visibility.
- [c] Weather and Obstructions to Vision.
- [d] Temperature.
- [e] Dew Point.
- [f] Wind; and
- [g] Altimeter Setting.

### EXAMPLE-

"Remarks ... density altitude, two thousand five hundred ... visibility variable between one and two ... wind direction variable between two four zero and three one zero ... observer ceiling estimated two thousand broken ... observer temperature two, dew point minus five."

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**d. Automated Surface Observing System (ASOS).** The ASOS is the primary surface weather observing system of the U.S. (See Key to Decode an ASOS (METAR) Observation, FIG 7-1-7 and FIG 7-1-8.) The program to install and operate up to 993 systems throughout the U.S. is a joint effort of the NWS, the FAA and the Department of Defense. ASOS is designed to support aviation operations and weather forecast activities. The ASOS will provide continuous minute-by-minute observations and perform the basic observing functions necessary to generate an aviation routine weather report (METAR) and other aviation weather information. The information may be transmitted over a discrete VHF radio frequency or the voice portion of a local NAVAI. ASOS transmissions on a discrete VHF radio frequency are engineered to be receivable to a maximum of 25 NM from the ASOS site and a maximum altitude of 10,000 feet AGL. At many locations, ASOS signals may be received on the surface of the airport, but local conditions may limit the maximum reception distance and/or altitude. While the automated system and the human may differ in their methods of data collection and interpretation, both produce an observation quite similar in form and content. For the "objective" elements such as pressure, ambient temperature, dew point temperature, wind, and precipitation accumulation, both the automated system and the observer use a fixed location and time-averaging technique. The quantitative differences between the observer and the automated observation of these elements are negligible. For the "subjective" elements, however, observers use a fixed time, spatial

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averaging technique to describe the visual elements (sky condition, visibility and present weather), while the automated systems use a fixed location, time averaging technique. Although this is a fundamental change, the manual and automated techniques yield remarkably similar results within the limits of their respective capabilities.

### 1. System Description.

(a) The ASOS at each airport location consists of four main components:

- (1) Individual weather sensors.
- (2) Data collection package(s) (DCP).
- (3) The acquisition control unit.
- (4) Peripherals and displays.

(b) The ASOS sensors perform the basic function of data acquisition. They continuously sample and measure the ambient environment, derive raw sensor data and make them available to the collocated DCP.

**2. Every ASOS will contain the following basic set of sensors:**

- (a) Cloud height indicator (one or possibly three).
- (b) Visibility sensor (one or possibly three).
- (c) Precipitation identification sensor.
- (d) Freezing rain sensor (at select sites).
- (e) Pressure sensors (two sensors at small airports; three sensors at large airports).
- (f) Ambient temperature/Dew point temperature sensor.

(g) Anemometer (wind direction and speed sensor).

(h) Rainfall accumulation sensor.

### 3. The ASOS data outlets include:

- (a) Those necessary for on-site air traffic control.
- (b) National communications network.
- (c) Computer-generated voice (through FAA radio broadcast to pilots, and telephone line).

### NOTE-

Wind direction broadcast over FAA radios is in true to magnetic north.

4. An ASOS/AWOS report without intervention will contain only that weather capable of being reported automatically. The modifier for this METAR report is "AUTO" if an observer augments or backs-up an ASOS site, the "AUTO" modifier disappears.

5. There are two types of automated ASOS: AO1 for automated weather reporting without a precipitation discriminator, and automated stations with a precipitation discriminator. As appropriate, "AO1" and "AO2" shall be used in remarks. (A precipitation discriminator is used to determine the difference between liquid and frozen precipitation).

### NOTE-

To decode an ASOS report, refer to FIG 7-1-8.

### REFERENCE-

A complete explanation of METAR terminology is located in Paragraph 7-1-30, Key to Aerodrome Forecast (TAF), Routine Weather Report (METAR).

ASOS

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Usage

Frequency
122.700
122.725
122.800
122.975
123.000
123.050
123.075
122.900
122.925
122.950

2. The following listing depicts other frequency uses as designated by the Federal Communications Commission (FCC). (See TBL 4-1-3.)

TBL 4-1-3

Other Frequency Usage Designated by FCC

Use	Frequency
Air-to-air communications & private airports (not open to the public).	122.750 122.850
Air-to-air communications (general aviation helicopters).	123.025
Aviation instruction, Glider, Hot Air Balloon (not to be used for advisory service).	123.300 123.500

4-1-12. Use of UNICOM for ATC Purposes

UNICOM service may be used for ATC purposes, only under the following circumstances:

1. Revision to proposed departure time.
2. Takeoff, arrival, or flight plan cancellation time.
3. ATC clearance, provided arrangements are made between the ATC facility and the UNICOM licensee to handle such messages.

4-1-13. Automatic Terminal Information Service (ATIS)

a. ATIS is the continuous broadcast of recorded noncontrol information in selected high activity terminal areas. Its purpose is to improve controller effectiveness and to relieve frequency congestion by automating the repetitive transmission of essential but routine information. The information is continuously broadcast over a discrete VHF radio frequency or the voice portion of a local NAVAID. ATIS transmissions on a discrete VHF radio frequency are engineered to be receivable to a maximum of 60 NM from the ATIS site and a maximum altitude of 25,000 feet AGL. At most locations, ATIS signals may be received on the surface of the airport, but local conditions may limit the maximum ATIS reception distance and/or altitude. Pilots are urged to cooperate in the ATIS program as it relieves frequency congestion on approach control, ground control, and local control

frequencies. The A/FD indicates airports for which ATIS is provided.

b. ATIS information includes the time of the latest weather sequence, ceiling, visibility, obstructions to visibility, temperature, dew point (if available), wind direction (magnetic), and velocity, altimeter, other pertinent remarks, instrument approach and runway in use. The ceiling/sky condition, visibility, and obstructions to vision may be omitted from the ATIS broadcast if the ceiling is above 5,000 feet and the visibility is more than 5 miles. The departure runway will only be given if different from the landing runway except at locations having a separate ATIS for departure. The broadcast may include the appropriate frequency and instructions for VFR arrivals to make initial contact with approach control. Pilots of aircraft arriving or departing the terminal area can receive the continuous ATIS broadcast at times when cockpit duties are least pressing and listen to as many repeats as desired. ATIS broadcast shall be updated upon the receipt of any official hourly and special weather. A new recording will also be made when there is a change in other pertinent data such as runway change, instrument approach in use, etc.

EXAMPLE-

Dulles International information Sierra. 1300 zulu weather. Measured ceiling three thousand overcast. Visibility three, smoke. Temperature six eight. Wind three five zero at eight. Altimeter two nine nine two. ILS runway one right approach in use. Landing runway one right and left. Departure runway three zero. Arnel VORTAC out of service. Advise you have Sierra.

c. Pilots should listen to ATIS broadcasts whenever ATIS is in operation.

d. Pilots should notify controllers on initial contact that they have received the ATIS broadcast by repeating the alphabetical code word appended to the broadcast.

EXAMPLE-

"Information Sierra received."

e. When a pilot acknowledges receipt of the ATIS broadcast, controllers may omit those items contained in the broadcast if they are current. Rapidly changing conditions will be issued by ATC and the ATIS will contain words as follows:

EXAMPLE-

"Latest ceiling/visibility/altimeter/wind/other conditions) will be issued by approach control/tower."

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frequency interference exists using the same problem, UNICOM develop a "least plan for airports designated for airports ICOM licensees are kHz spaced channel limited number of ing, 25 kHz channel COM licensees may s in accordance with consider for approval.

information may not be 2.950.

Services Available to Pilots

Services Available to Pilots

4-1-7

ATIS